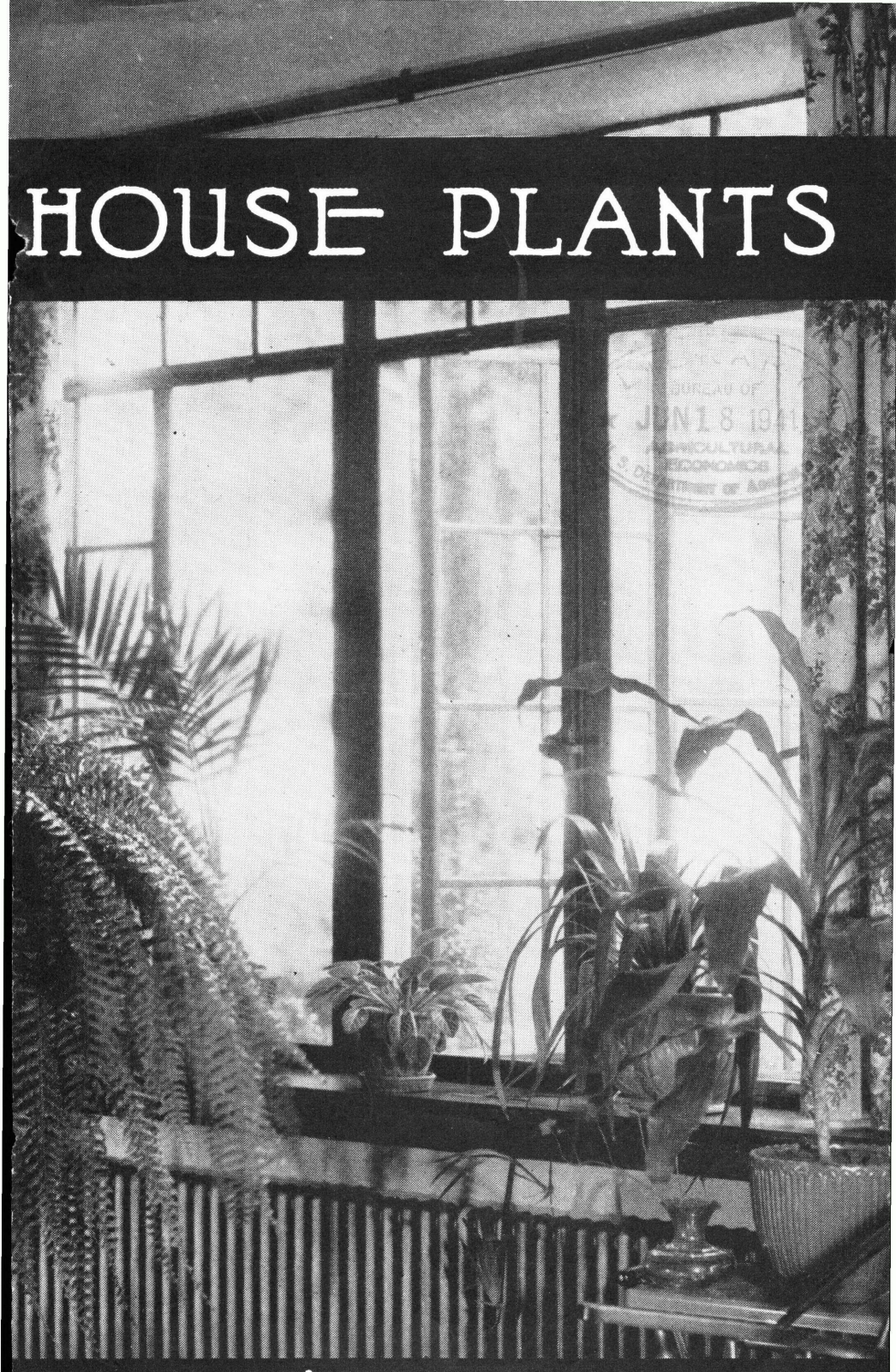
HOUSE PLANTS



FARMERS' BULLETIN No. 1872
U. S. DEPARTMENT of AGRICULTURE

SUCCESS WITH HOUSE PLANTS in a dwelling depends upon the wisdom used in selecting those that will thrive in the environment in which they are to be placed and with the care that they receive. Factors of environment that should be considered include intensity of the light, the temperature, humidity of the air, and the possible presence in the room at times of traces of coal or illuminating gas. Factors limiting success with house plants include light coming from but one direction, excessive heat, too little atmospheric moisture, and consequently the rapid loss of water from the plant itself. Flowering plants require more sunshine than do most plants grown primarily for their decorative foliage. Plants that are relatively inactive during the short days of winter require less light, moisture, and air than do plants that are in active growth during this period.

Highly colored and overornate containers are to be avoided. Jardinieres to be useful must be watertight; however, drainage water in them must be removed to avoid keeping the roots of plants constantly immersed in water. Plants growing in continuously water-soaked soil soon die.

A good potting soil for house plants must be friable and light enough to permit excessive water to drain adequately from the container. It must also have sufficient organic matter to retain a proper amount of moisture for the functioning of the plant. An overrich soil is to be avoided, as undue stimulation of the growth of house plants is not desirable.

Not all plants require repotting each year. Often all that is required is the replacement of the topsoil in the pot with some new fresh soil.

When plants are watered they should receive a thorough soaking so that all the soil in the pot has adequate moisture. After thorough watering, additional water should be withheld until the soil becomes slightly dry.

Many house plants are benefited if they are set out-of-doors during the warm days of summer. Setting the pots entirely in soil keeps moisture more uniform within the pots and obviates frequent waterings.

Washington, D. C. Issued May 1941

HOUSE PLANTS

By FURMAN LLOYD MULFORD, formerly *associate horticulturist, Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry* [1]

Contents

ADAPTATION

THE USE OF PLANTS growing in pots and containers of various sorts seems to be an almost universal custom in countries where dwellings are anything more than simple shelters. Plants so grown may either be long-lived and stay in the house for a considerable time or be brought into the house for their short period of flowering or fruiting and then be discarded. In either case they succeed only when wise choice is made of the kind of plant and the cultural practices that are conducive to success are reasonably well understood.

After living in the open the plant finds all the conditions modified in the house. Outdoors, under optimum conditions, it would have light from all directions and the amount of light it liked, temperatures to which it is accustomed, free movement of air, moisture at the proper seasons for its growth, and a reasonable association with other plants.

Usually in the house the light will come only from one side and often in diminished intensities, temperatures will usually be too high, and circulation of air will be reduced or drafty. In addition, moisture in the air will be below optimum requirements, and the moisture in the soil will be dependent upon the skill and attention of the caretaker. The soil, which is the most easily controlled factor, may or may not be fertile, and only rarely will there be enough of it.

The person who wishes to grow plants in a house or an apartment, if he does not have a greenhouse where the plants are grown and from which they are moved in season, must decide whether he can sufficiently control the light, air, humidity, soil, soil moisture, and temperature so that the plants will thrive, or whether he wishes to accept the conditions in the modern home and choose only plants that will succeed there with moderate adjustments. In nearly all cases it is wiser to follow the latter course.

[1] Acknowledgment is made of assistance given by B. Y. Morrison, principal horticulturist, and Claude Hope, assistant horticulturist, Division of Plant Exploration and Introduction, in the preparation of the discussion on the care of the different house plants.

A reduction of the common house temperature to one suited to the growth of most plants would usually be unsatisfactory to the household. A sufficient increase in humidity for the good of the plant might have a disastrous effect on housefurnishings. The modern devices for ventilation, however, will probably help this situation somewhat.

Throughout this bulletin it will be assumed that plants are to be grown at windows of one sort or another and that there is no greenhouse or conservatory to serve as a feeder.

Unless the window is of the bow type, i. e., projecting beyond the facade, it will give light from one direction only and in amount depending on the direction that it faces. The window on a north facade will usually provide a good light but little sunshine except for a brief period in midsummer, when the plants are usually elsewhere. East and west windows provide morning and afternoon sunlight, respectively, and a south window, the greatest amount of all. It is obvious that it would be unwise to place flowering plants at the north window for winter bloom unless they are to be removed as soon as their flowers fade. Foliage plants, on the other hand, or plants that pass the winter in a semidormant stage, as do many cacti, may well be placed at such a window during the winter. Conversely, it would preempt good space for flowering plants to put foliage plants that are inactive during the winter months in a south window.

Certain mechanical details need brief consideration. The usual practice is to put shelves of one sort or another by the window, with the main shelf preferably slightly above the level of the window sill. This permits opening the window a little without a draft striking directly on the plants.

Some prefer a table of the right height rather than a shelf; one with casters on the legs so that it can be easily pushed away from the window whenever desirable. The need of handling more or less heavy potted plants many times each winter is too often overlooked. If the table is high enough to clear the radiator, if there is one under the window, it may be possible to place on the radiator pans of water to increase the air humidity.

Another mechanical convenience is a metal pan made to fit the exact size of the shelf or table top, so that if water is spilled no damage is done. Such a device provides also an ideal means for occasional soaking with water from the base. Some prefer to place the pots directly on the pan; others cover the bottom of the pan with fine gravel upon which the pots rest. In the latter case it is helpful to have a small tap at one end of the pan, so that excess moisture can be drawn off.

Whether there should be other shelves, preferably of glass, above this bottom shelf will depend on the size of the plant collection and the type of plant. The use of glass shelving can be made a very decorative feature of a plant window.

TYPES OF CONTAINERS

The day when the ordinary red terra-cotta flowerpot was the only available manufactured container is long past. Flowerpots can now be had in a multiplicity of shapes, sizes, and colors and in a great variety of materials and may become an interesting feature of the

plant collection. Types that have good proportions and good color are to be preferred to all others. They may be of glazed or unglazed earthenware, of metal or even of wood, provided they have the proper provision for drainage at the bottom.

It is possible to bore holes through various bowls and vases to provide means of drainage, and then such containers become useful as flowerpots. For boring such holes a brace and special bit are required—also endless patience, as too rapid work may shatter the vessel.

The same rule that governs the choice of vases for cut flowers should apply in the choice of flowerpots, namely, colors that will not detract from the beauty of the plant, and an absence of painted or modeled decorations, which are usually of poor design.

Placing potted plants in jardinieres is an unwise practice except for the extremely watchful grower. If the pot does not fit too snugly and water is never allowed to stand in it, a jardiniere is not objectionable, and it may be as decorative as a glazed pot; besides, it can be used for a plant that is placed elsewhere than in the plant window.

A saucer placed under a pot presents the same danger from excessive water as does a jardiniere. In all cases saucers should be glazed or waterproofed.

Various types of window boxes may be purchased or made at home. All have objections in that they are heavy to handle when filled with soil and they allow only two positions as related to the window, whereas individual pots may be turned to any position of exposure desired.

SOILS

A common problem in handling plants in the home concerns the type of soil to use in the pots, window boxes, and other containers. A good general-purpose greenhouse compost suitable for most plants consists of about three-fourths in volume of loamy soil (if it is from a sodded area containing grass and grass roots, so much the better) and one-fourth animal manure, thoroughly mixed together and handled over from time to time until all the organic matter is completely disintegrated. If the soil is a little too heavy, enough sand may be added to improve its texture.

Although the home plant grower will not often be able to obtain just this type of compost, the description indicates approximately what is needed. A fairly rich loamy soil from the garden or border may be used as the foundation. In place of manure to supply organic matter, decaying leaves, grass, weeds, and the like may be incorporated with the soil and sand added if needed. Such vegetable material can often be collected during the season, accumulated in a pile in some out-of-the-way place where it will rot down and disintegrate in a comparatively short time if kept slightly moist. It is then suitable for incorporating with the soil. Decay of such vegetation may be hastened, if it is covered with soil as an aid in keeping it continuously moist. The addition of peat to the soil instead of other vegetable matter will aid in giving it the desired texture.

This type of soil is suitable for most potted and other house plants. A very few plants may need a different soil mixture or special treatment, for example, those requiring a distinctly acid medium in which

to thrive. For such plants it may be wise for the grower to seek further information than can be readily given here.

To maintain fertility, a very small quantity of bonemeal can be applied occasionally to each pot or container, or some of the prepared chemical plant foods can be applied according to directions that accompany them.

POTTING AND REPOTTING

Plants for a permanent window garden should be established in pots before the season arrives for moving them into the house, unless they are purchased from the florist during the winter. They should be set firmly in the pots with the soil a half inch, more or less, below

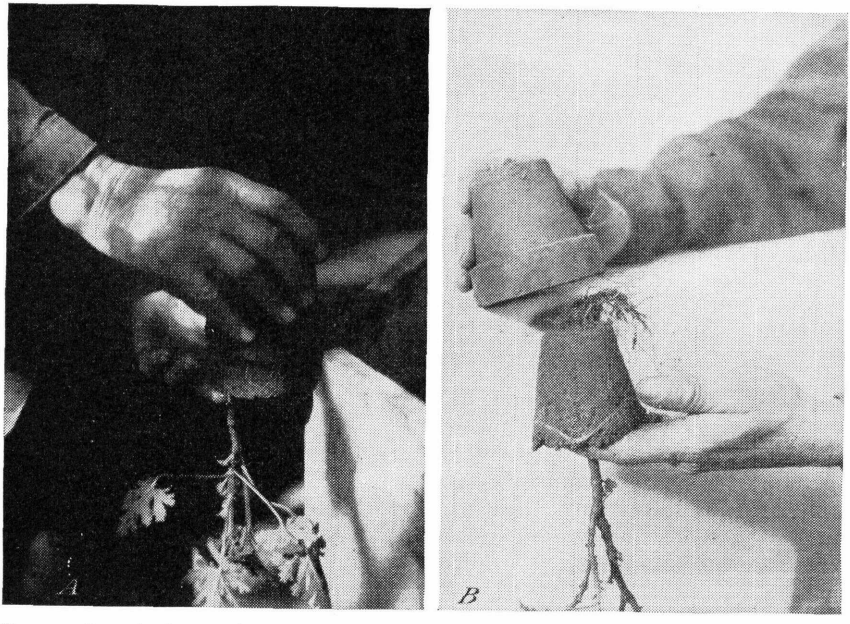


FIGURE 1.—*A*, Removing the pot from a house plant to inspect the condition of the ball of earth; *B*, the ball of earth of this house plant is not sufficiently covered with roots to be considered pot-bound.

the rim to facilitate watering, and with adequate drainage, such as broken pieces of pots, gravel or cinders, in the bottom of the pot. They should be in the smallest size of pot that will properly hold their root mass. All pots should be thoroughly cleaned before they are used, and it is well to soak them until they take up all the moisture they can absorb before the plants are placed in them.

After plants have been growing during the fall and winter seasons in the house, they may need repotting (fig. 1) in early spring. For most plants, however, repotting need not be an annual operation. Many plants should have only a little of the topsoil removed and this replaced with fresh soil; others should be entirely repotted, as much new soil being used as is possible without seriously disturbing the roots. Repotting in this case should be done with the same care that one would use in any transplanting, such as reduction of the

evaporating surfaces, shading until evidence of new root growth appears, and, for most plants, growing at a slightly lower temperature for a short time.

WATERING

There is no general rule that can be followed in relation to watering. The more active the growth of the plant, the more water it will probably need. Because growth is least active during the short days of winter, that is usually the period in which the least water is needed. The usual complicating factor is the effect of high house temperatures, which quickly deplete the moisture in the pot and cause wilting.

Water may be poured directly on the surface of the soil in the pot, or into the saucer or jardiniere, or the pot may be immersed in a vessel of water for a time and then removed. If the water is added directly it must be so applied that it does not wash away the soil from the crown of the plant or get into the crown, where it may cause decay. Cyclamen is particularly susceptible to such injury. In watering by other methods the only caution to be remembered is that the roots of most plants must not be left standing long in water. As soon as the soil appears to be saturated, the pot should be removed to a place where all excess moisture will drain away.

SUMMER CARE

Many kinds of potted plants grown in the house during winter are decorative on porches or terraces in the summertime, particularly in those types of gardens in which potted plants are used on paved terraces, on balustrades, or by formal pools. In such locations plants need even more careful watering in summer than during the winter.

The amount of sunlight that the plant tolerates will determine those that can be placed in the open and those that must be kept under shelter. Many house plants can be carried through the summer months with a minimum of care by sinking the pots to the rim in a semishady border. Before the nights become cool in the autumn the plants can be lifted and repotted, if necessary, in preparation for the winter.

If plants, such as geraniums, lantanas, or fuchsias, are taken from pots and planted in the open border, it is usually more satisfactory to raise new plants from summer cuttings than to lift the older plants and bring them into condition for continued growth.

OTHER CONSIDERATIONS

One of the difficulties about growing plants in the house during the winter is that some kinds will remain in more or less active growth continuously, whereas others, including some very satisfactory house plants, must have a period of winter rest. The palms may grow more rapidly in summer, but their new leaves continue to develop one after another, even if at a slower rate, during the winter. The azalea makes a seasonal growth in the spring, develops flower buds during midsummer, and approaches the autumn and winter in a nearly dormant condition. Many cacti grow only during the summer and are most effective house plants during the winter months if kept so nearly dormant that they show no perceptible change until spring.

Many plants now offered for sale as potted plants should be considered as little more than cut flowers. Most of the primroses, cinerarias, poinsettias, calceolarias, marguerites, roses, lilies, tulips, colored peppers, and the like, if purchased in flower should be cared for until the flowers pass and then be discarded, as their whole plant life has been adjusted to greenhouse conditions that cannot readily be approximated in the house. Nearly all of these kinds of plants can be raised at home if desired; if accustomed to home conditions, they will last longer than florists' plants but will require much more attention than other types that are less active in growth during the winter.

If only one window is available, it is wisest to select only those plants that are suited to the conditions it affords even if it means leaving out some favorite kinds. If there is choice among several windows, it is probable that an east or west window in a cool room will provide the greatest latitude in the selection of plants.

The choice of plants to grow in apartments is even more limited than that for houses, because the plants must be kept inside during the entire year.

KINDS OF PLANTS FOR HOUSE CULTURE

FERNS

Ferns are among the most satisfactory house plants in spite of the fact that their natural habitats are very different from the conditions found in houses. They are essentially plants accustomed to diffused or broken light, preferring soil rich in humus and of such a nature that water moves through it freely. The several genera that furnish the best species for pot conditions are essentially tropical or subtropical, so that some care must always be taken to prevent extreme chilling. Because their rootstocks may make dense crowns or be widely running, attention must be given to the size of the pot to see that it is always large enough but not too large. Their special seasons of growth must be watched and additional water supplied at those times, with less water through the remainder of the year. In all cases the moisture should be uniform, with no sudden and extreme alterations of wetness and dryness.

Ferns have many forms of fronds. Their essential beauty lies in a good development of the specimen, whether it forms a plumy mass or a formal rosette.

The swordferns (species of *Nephrolepis*) are well known and desirable. All of this group develop more or less erect fronds. The simple oblong leaf segments of the primitive types become variously subdivided in some of the clonal varieties, of which there are many. *N. exaltata* seems to have been the species from which most of the variants have arisen. *N. exaltata bostoniensis* is more graceful and drooping and has a denser crown than the more common variety. Other horticultural varieties are Scott (*scotti*), a miniature; Pierson (*piersoni*), Barrows (*barrowsi*), and Whitman (*whitmani*), all with plumose development of the pinnae, are better grown with a little more shade than *N. exaltata*.

There are numerous species of maidenhair ferns (species of *Adiantum*), mostly from the Tropics, but including some that are hardy to cold; these, however, are of little use as potted plants. All maidenhair

ferns are characterized by the ebony black stipes of the fronds and the delicacy and grace of the segments. Most of the varieties grown in greenhouses are not suited to the dry air of houses. The variety *imbricatum* of the hardy *A. capillus-veneris* will withstand house conditions, and the old and long-cultivated *A. cuneatum* is very good. These and some other forms do not grow continuously throughout the year, but water must not be withheld during the inactive season, as growth will not start again in the spring if, as a result of too great drying, the tips are killed.

The house hollyfern (*Cyrtomium falcatum*), with stiff fronds 2 feet long and leaf segments 4 to 6 inches long and 1 to 2 inches broad, is in strong contrast to the swordfern and maidenhair types. The upper surface is very dark green and the under surface considerably lighter and studded with brown spore cushions. It always attracts much attention.

The brakes, or spider ferns (species of *Pteris*), are much used as house plants, especially in fern dishes where they are often so crowded as to hide their beauty. They are mostly small ferns with triangularly-palmate leaves, the sections being narrow and grouped. They vary in color from deep to pale green. Most of the commonly cultivated forms are horticultural clons of *P. cretica*, including both variegated and crested forms.

The birdsnest fern (*Asplenium nidus*) is an interesting fern with individual fronds of polished green. The great beauty of this plant does not show until it is of an age to make a perfect specimen, a symmetrical rosette of dark-green leaves with the newer fronds developing in the center, set off by the misty brown and dark-brown hairy bases of the stipes.

All ferns in pots can be summered out-of-doors in shaded places where they will not be broken by winds or driving rains. They can be divided at the time of repotting, which should come at the end of a dormant period, or small runners can be taken at any time from those with stolons.

PALMS

Palms have long been grown as house plants; but as houses have become smaller, palms are found less frequently than formerly. In the natural state they vary greatly in size and habit as well as in geographical distribution, and offer a far greater variety of form and use than is reflected in those species commonly offered and grown. It must be remembered that most of the palms offered by growers are young plants that make trees in their native haunts; that a well-grown palm, as it ages, will present a constantly increasing problem as to its mechanical handling, even if by careful repotting and feeding the pot sizes are kept at a minimum.

Like any other foliage plant, they should be grown so that no accident will mar the perfection of the leaves, which last for many years.

Palm leaves are usually compounded either palmately or pinnately, and there is a great diversity of size among leaf segments that may be extremely delicate or so large as to be almost coarse. They may be smooth and glossy or somewhat roughened and dull. They may also show various hues of green, from the darkest to light-yellow greens or

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even glaucous gray blues. The stem or rachis of the palm leaf may be of a contrasting color and may be armed with teeth or spines.

The two-feather palms so commonly used for decorations at large functions and less often grown in homes, where they would do well enough, are species of *Howea*, often miscalled *Kentia*. The two species (*H. belmoreana* and *H. forsteriana*) make handsome specimens with long and gracefully curving leaves but in general are too large for the average home.

The Chinese fan palm (*Livistona chinensis*) is attractive in its young stages with its symmetrical leaves, which look as if they might easily be trimmed to little fans, but in time it grows to such size as to require a pot or tub of considerable weight. Its leaves are tough enough to permit of its being placed in a shady spot on the lawn in summer.

The Weddell palm (*Cocos* (*Syagrus*) *weddelliana*) is the only common feather palm suitably proportioned for the average window. The leaves are slender and graceful, the pinnate divisions being very narrow and of delicate green with silvery under surfaces. It does not withstand hardships, such as too dry air or too much direct sunlight or any irregularities in watering.

The Areca (*Chrysalidocarpus* (*Areca*) *lutescens*) is a feather-leaved palm that forms clumps with several shoots, often of unequal size and height in older specimens. These are particularly beautiful because of the yellow color of the stems and leaf bases. To hasten this effect several small palms are often potted together. Only in relatively old specimens does the plant attain its full beauty.

Only one species, the pygmy Roebelin phoenix (*Phoenix roebelini*), of the genus that includes the date palm of commerce, should be considered for the small or moderate-sized house. It must grow a long time before it develops a trunk. Next after *Cocos weddelliana*, this is the most graceful of the commonly grown palms.

Palms are greatly improved in appearance if their leaves are frequently washed clean of dust. The only other special precaution is a watchfulness for scale insect attacks. Each scale will leave a tiny mark where it has worked, and if the infestation is heavy enough, the whole leaf may be ruined.

OTHER FOLIAGE PLANTS

Cycads.—There are many forms of cycads found in botanical collections, but the only species that is used to any extent as a house plant is the so-called sago palm or sago cycas (*Cycas revoluta*). The mature plant has a short trunk with a handsome crown of stiff, dark-polished green, palmlike leaves. In the South or in other warm regions where it can be grown out-of-doors it makes fine, vigorous, annual growth, but as a pot plant in the North a lesser number of leaves may form annually. In general, it should receive the same treatment as palms.

Pandanus.—The so-called screwpines, which do not in the least resemble pines, are often grown as pot plants for their habit of growth and beautiful foliage. When young, the plants form a fine rosettelike clump of long, sword-shaped, arching leaves, which assume a spiral arrangement as the trunk develops. At the same time fleshy brace roots appear that reach down and enter the soil. Small plants may develop from buds along the trunk, thus making a more bushy specimen.

A form with marginal white stripes is known as *Pandanus veitchi;* one with irregular yellow stripes as *P. sanderi.* These are a pleasing variation from the common green form.

ARAUCARIA.—The Norfolk island pine (*Araucaria excelsa*) is often used as a pot plant in its early stages, although like many other pot plants it becomes a tree in its native home. It is valued essentially for the formal symmetry of its growth, as its branches are borne in whorls along the stem, tier after tier. It must have light enough to prevent irregular growth and some care to prevent scale insect or red spider attacks. Any good soil will meet its major needs. When a specimen has outgrown its usefulness it should be discarded.

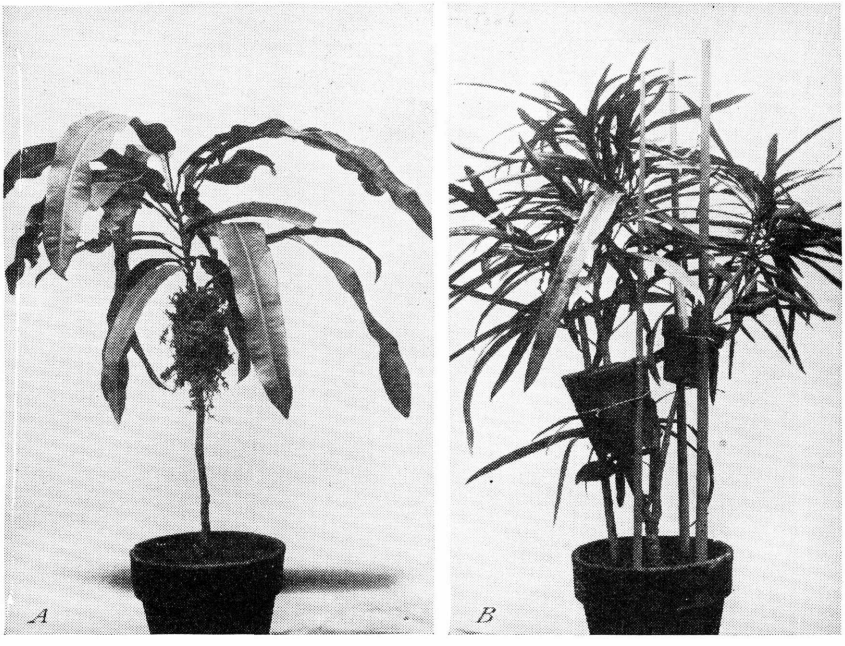

FIGURE 2.—*A,* Ringing as practiced on a croton to induce root formation before severing a branch as a new plant. Vertical slits have been cut in the bark and packed with sphagnum moss; more moss is tied over the packed slits so that the cut bark may be kept moist until roots grow; *B,* croton with split pots secured to the stem at such heights that soil may be firmly packed about the mossed slits.

CROTONS.—The correct botanical name for these gaudy tropical shrubs is *Codiaeum.* People like them apparently because they are bizarre rather than beautiful. Their evergreen leaves are very tough, are variously shaped, and are variegated with yellow, scarlet, green, white, and pink in all sorts of patterns and combinations. To grow well in pots they should have a light, rich, fibrous soil, even moisture, good light, and warmth. With age the oldest leaves fall, leaving bare trunks. The plant can then be induced to form roots close to the leaves (fig. 2), this portion being cut off and potted as a new plant and the old plant discarded.

In growing crotons the simplest color patterns should be chosen, and decorative pots of cream or gray white should be used as a cool contrast.

RUBBER PLANTS.—Formerly there was but one species of rubber plant, *Ficus elastica*, in general use as a house plant. In nature it is a fine tropical tree of noble proportions. In pots it tends to grow as a single stem or trunk with handsome leaves that drop with age or chilling, leaving a naked stem that occasionally develops branches at inconvenient places. Plants are improved by aerial rooting, as described under croton. At present the rubber plant is more or less out of fashion, but it is not out of cultivation even though it is by no means the most beautiful of the tropical trees that can be grown indoors.

The fiddleleaf fig (*Ficus pandurata*) is the only rival in popularity to *F. elastica*. In addition to all the faults of the first species it has a somewhat more uncertain disposition, and its only virtues are the very handsome leaves of a lighter green and a more interesting shape, as suggested by its common name.

There are numerous other species of *Ficus*, but few people have space to give to such large plants that make so little return in decorative effect.

ASPIDISTRA.—The aspidistra will stand what almost no other plant will endure; namely, heat, dust, darkness, and lack of water. When well grown, its return is a luxuriant mass of broad leaves of dark, glossy green that make a fine waving mass above the pot. In a decorative pot or jardiniere, such plants can be very handsome. The dull and curious flowers are borne close to the ground.

There is also a form of aspidistra, with irregular stripes of white running the length of the leaves, that is little less vigorous than the common variety. It is a plant for hallways or verandas, but never for the window.

SANSEVIERIA.—Sansevieria or bowstring-hemp (fig. 3), sometimes called snake plant, and in New England lucky plant, like the aspidistra is a plant that will stand almost anything. It should be given a rich heavy soil and proper watering in order to develop into a fine clump of erect, strap-shaped green leaves curiously marbled with grayish white.

There are several species that vary in size and habit of leaf and at least one horticultural clon that has yellow marginal variegation as well. All flower occasionally with spikes of starry white flowers that attract considerable attention because they are unexpected.

BEGONIA.—There are a great many varieties of begonias. (See also p. 22.) All flower, but many are grown particularly for their foliage. Foliage or rex begonias are a group of hybrids derived largely from *Begonia rex*, having large, irregular, usually thick leaves, irregularly marked and blotched. Each variety has its own pattern and combination of pastel shades, the leaves or stems or both often being hairy. They grow best in temperatures below that of the average living room, preferring a soil kept moist but not wet. They summer well in a bright but not sunny window, on a porch, or with their pots set in the ground in a partially shaded place protected from wind. They are propagated by pegging leaves down on sand after the veins have been cut at numerous places. New plants will form at these cuts.

CITRUS.—Citrus trees, including orange, lemon, and grapefruit, are sometimes grown in pots. They make excellent foliage plants but seldom bloom satisfactorily. With the limited light of living rooms

they seldom fruit even though they may bloom. The Otaheite (Tahiti) orange (*Citrus taitensis*), Ponderosa lemon, and Meyer lemon are the kinds most likely to flower and fruit indoors. They need to

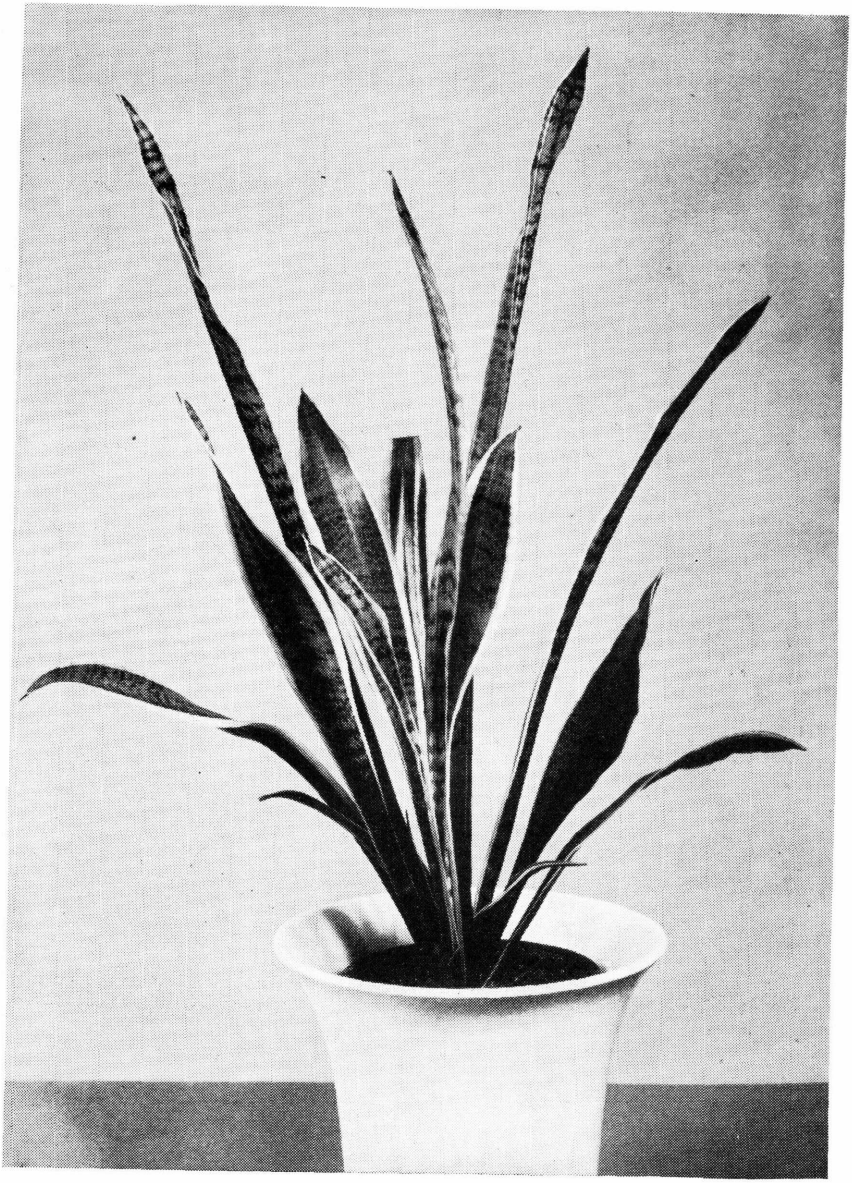

FIGURE 3.—A plant of sansevieria, or bowstring-hemp.

be moderately pot-bound to induce the formation of flower buds and require rather liberal feeding when flowering. All citrus trees should have water partially withheld in late fall and early winter and be kept cool, thus being forced to rest for a time, but they must not become

so dry as to lose their leaves. Myrtle-leaved orange and Chinnotti orange are less common citrus types, which have small, closely placed leaves and are useful as pot plants. Grapefruit seeds are sometimes planted very thickly in low bowls for the mass of foliage formed by the crowded seedlings, and may be used for table decoration.

GARDENIA.—Under ordinary circumstances gardenias, or Cape-jasmines, are not often successful house plants, because they do not flower freely. They require an acid soil, perfect drainage, an even supply of moisture, cool air with soil temperature not much lower, even humidity, and abundant sunshine. In spite of these rather exacting requirements, gardenias are often grown as pot plants and occasionally reward the grower with a few fine, fragrant white flowers. For further information write for Leaflet 199, Gardenia Culture.

COLEUS.—Coleus has many varieties, with foliage showing a wide range of shades and patterns of green, red, and yellow. They thrive in a warm, dry atmosphere, need plenty of sunshine and moisture, but will not survive chilling or an excess of water in the soil. They are especially subject to the attack of mealybugs. New plants from cuttings are best started in late summer and can be readily shaped by frequently pinching off the growing tips. They may also be started in the spring or early summer from cuttings removed in heading back the old plants. Plants are easily grown from seeds and may have new and interesting combinations of colors.

CORDYLINE AND DRACAENA.—These two nearly related genera are confused in popular terminology, and some of the species have been moved from one genus to the other by botanists.

The genus *Cordyline* is most often represented by *C. australis* in some of its forms or by *C. terminalis*, which has even more horticultural variants. In nature these species may make tall, almost tree-like plants; as pot plants they are useful chiefly while young. Their value lies in their leaves, which are borne in fine feathery sheaves, usually green but often variegated or tinged with various colors.

The genus *Dracaena* is most often represented by *D. godseffiana*, *D. goldieana*, *D. sanderiana*, and the various forms of *D. fragrans*. For the most part these are smaller plants than the cordylines and have wider leaves with more brilliant variegations. They require somewhat warmer temperatures than cordylines.

Both groups should have rich, fibrous, well-drained soil with ample water. Their foliage should be kept clean by washing as needed, but care should be taken that no water lodges in the leaf bases, where it causes decay. When the plants become tall or leggy they can be treated as described under croton.

CRYPTANTHUS.—This genus belongs to the same family as the pineapple. All of the commonly grown species form rosettes of stiff leaves that are borne upward on slender stalks. The narrow leaves are often beautifully colored and decorated by waved margins. The main growth is made during the late winter and early spring. The flowers are not showy.

Cryptanthus acaulis always forms stemless rosettes as its name indicates, except in a few clonal varieties. The leaves of the common variety are a clear green but in other varieties may be flushed with rose, pink, or coppery red. *C. bivittatus* is a larger plant, the rosette reaching a diameter of a foot or more. The leaves are broader and give the effect of being coppery brown with greenish-silver cross bands.

C. zonatus more or less resembles *C. acaulis*, except that the plants may develop stems and the leaves have two silvery to coppery pink bars that extend longitudinally along the leaf. *C. beuckeri* differs from the other named species chiefly in the shape of the leaves, which have leafstalks with an expanded blade above. The plants grown here are light yellowish green with flakes and stripes of lighter green.

All kinds of cryptanthus prefer a rich soil with plenty of humus. There should be ample moisture during the months of growth and for the rest of the year as well. As they grow slowly and keep their leaves for years they become very handsome specimens. They require good light but need not be set in positions where direct sunlight falls on them.

AGLAONEMA.—There are several species of this genus that are cultivated. The most common one *Aglaonema simplex*, goes by the name Chinese evergreen, which is neither descriptive nor accurate. As usually grown, it is planted in water rather than in soil and treated much as hybrid ivy is often treated. The plant is distinguished by handsome, somewhat arumlike leaves borne at the ends of green canelike stems. When these become too long, the upper portion may be cut off and rerooted. The great value of this plant is that it will flourish for years in the darker part of a room, often on a mantel, a shelf, or a bookcase. With such treatment the curious flowers are not often produced.

MARANTA.—Although these handsome tropical foliage plants (fig. 4) are more often grown in conservatories than in the home, several species and forms make excellent pot plants for windows where little sunshine falls, provided the temperature is moderately high and the air is not too dry. The tuberous roots soon develop into fine tufted growths with masses of handsome leaves that are often variously marked and tinted. The taller flower stalk is more interesting than beautiful. The plants require a rich soil, constant and relatively large amounts of moisture, and moderate light.

CYPERUS.—The same genus in which are found the famous papyrus plant of ancient history and the chufa of the Southern States also contains an old and almost infallibly successful house plant, the umbrella-sedge (*Cyperus alternifolius*). This plant makes a thick clump of tall green stems, each crowned with a circle of green leaves arranged like the ribs of an umbrella. It will grow in sun or shade in any rich soil, provided there is a constant supply of moisture. Propagation from the leaves is easy and may be accomplished by cutting the stem on which leaves are growing and then inverting the leafy parts under water. This treatment soon produces a fine crop of new plants from the axils of the leaves.

GREVILLEA.—Among the many grevilleas that have been introduced into cultivation, only the so-called silk-oak, *Grevillea robusta*, is often used as a house plant. When grown in a pot it becomes a large shrub rather than a tree, valued chiefly for its beautiful fernlike leaves. Like many tropical trees grown as pot shrubs, this plant may be cut back whenever it becomes too large and allowed to form a new top of proper dimension. In commercial production it is usually grown from seed; the seedlings are kept to a single stem, and the plants are discarded as soon as the lower leaves drop. Any good potting soil, medium temperature, and moderate light will suit it.

FIGURE 4.—*Maranta bicolor*, double-potted, moss inserted between the pots, and the pots placed in a jardiniere.

SUCCULENTS

Succulent plants, or succulents, are plants that have much-thickened, more or less succulent and juicy plant parts, whether they be stem or leaf (fig. 5). They are found in many families and occur in genera

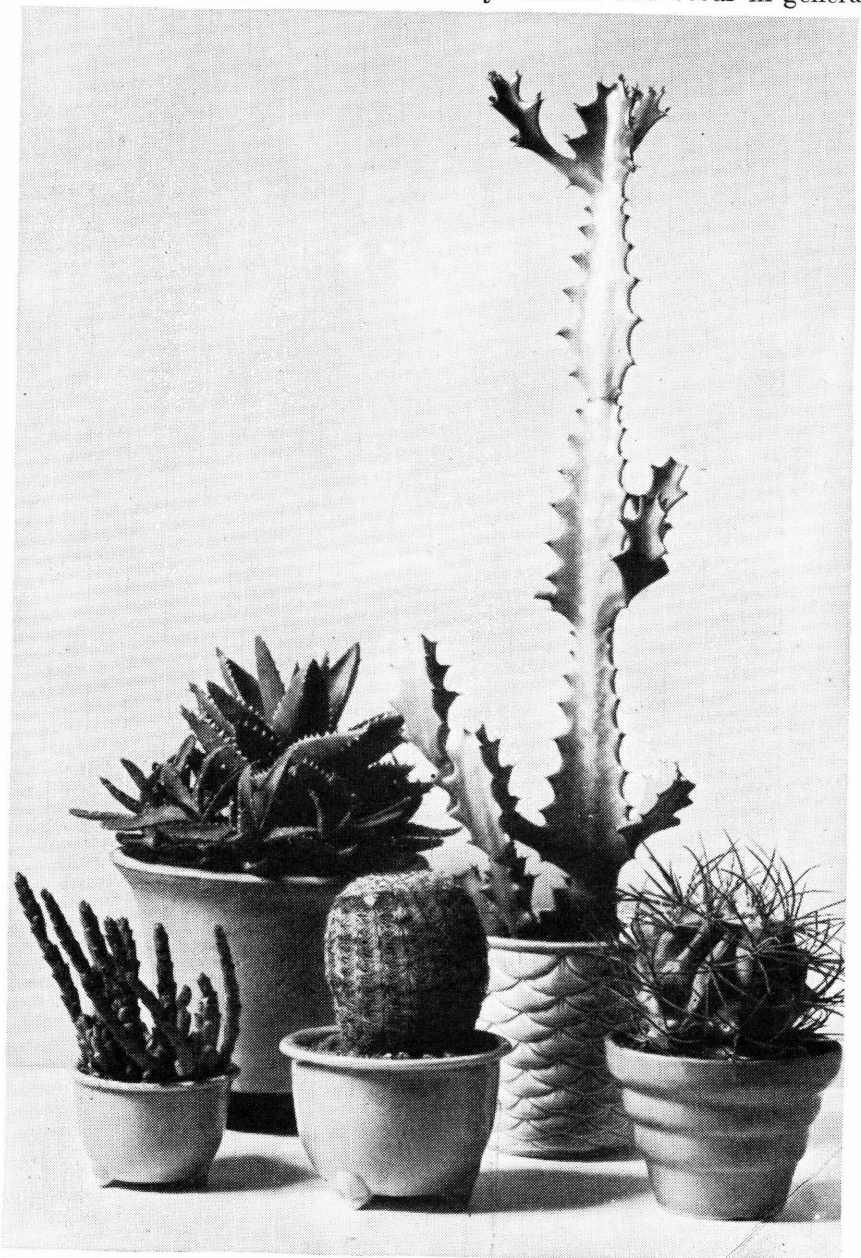

FIGURE 5.—Various types of succulents: Back row left to right, *Aloe distans, Euphorbia lactea;* front row, left to right *Caralluma lutea, Echinocereus rigidissimus, Ferocactus* sp. The plants in the front row are in glazed pots; those in the back row in jardinieres.

that are not exclusively of this type, as, for example, the genus *Euphorbia* in which there are many species that are ordinary herbs as well as species that suggest cacti.

Many succulent plants are useful house plants, because they do not require much care during their winter period of inactivity. To ensure a safe wintering, nearly all of them should have ample light, relatively cool temperatures, and perfectly drained soil mixtures.

CACTI.—These form the most familiar group of succulents among house plants, but even they are of varying degrees of succulence, and some are less tolerant of dryness than others. There are numerous forms, and they are exceedingly diverse in their requirements.

Cacti are usually grown for the beauty of their flowers or for the beauty of the plants themselves. The flowers may be abundant or noteworthy because of their size and brilliance or the plant bodies may be interesting because of their shape or structure or their spines or hairs (figs. 5 and 6).

Various types of cactus plants might be mentioned: The type that is spherical or melon-shaped and increases in size with age without many offsets or branches; the similar type that forms masses about the mother plant; the type that grows upward like a shrub with variously jointed units; the type with flattened branches that look more or less like great flat leaves, and the vinelike climbing and trailing types.

For house plants, the kinds that will endure the moderate and unevenly distributed light from the average window should be chosen. One should also select types that will not grow out of bounds and will tolerate dry air.

There are many opinions as to the proper soil for cacti. In general, the soil should not be too rich and should have some humus. For most species some lime should be added, and perfect drainage should be provided for all species.

Unless there is ample room for a real collection most species of *Opuntia* can be omitted. The familar *O. microdasys* gives a sufficient representation of this genus and makes handsome specimens with the gray-green pads well studded with small points of dull gold hairs.

Among the numerous species of *Mammillaria, Neomammillaria, Echinocereus, Echinocactus, Lobivia, Echinopsis, Ferocactus,* one may take his choice. If more shade can be provided and greater care in watering, *Zygocactus* and *Epiphyllum* are well worth while.

In summer, various practices may be followed. The plants may be kept in pots in the same place where they have wintered, they may be moved to more airy, sunny quarters, or they may be actually planted out in the ground and lifted in autumn. With some species this last is not a desirable practice.

ALOE.—Species of aloe are very numerous and are represented by many forms from small rosettes to branching, treelike shrubs, or even fairly tall, climbing vines. For the house only the smaller forms are useful (figs. 5 and 6).

The Barbados aloe (*Aloe vera*) makes a rosette like a centuryplant. It is smaller and has narrower leaves that are grayish green dotted with white and have serrate, toothy margins. When old enough, the plant sends up spikes of yellow flowers somewhat like those of the red-hot-poker plant (*Kniphofia* sp.). *A. variegata* is a much handsomer plant with dark-green leaves mottled and margined with white. It produces spikes of scarlet-orange flowers. The great beauty of this species lies

in the architectural symmetry of the leaf arrangement along the stalks. *A. ciliaris* may serve as an example of the group with a more or less climbing habit.

All aloes need fairly rich, well-drained soil, sunshine, free ventilation, and moderate temperatures.

FIGURE 6.—Other types of succulents: Back row, left to right, *Gasteria, Aloe nobilis;* front row, left to right, *Haworthia glabrata concolor, Mammillaria bocasana, Echinocactus grusoni.*

AGAVE.—The centuryplant (*Agave americana*) is the species most often found; it is either green or variegated. Because of its great size, it is one of the least useful *Agave* species. The genus is extensive, and most of the species are too large for ordinary houses. The handsomest of the smaller sorts is *A. victoriae-reginae*, which scarcely exceeds a height of 18 inches and makes a dense, almost-semispherical

plant with dark leaves, stiff and erect and marked as if painted with white and silver. Another house-plant species might well be our American *A. parviflora,* with gray-green rosettes of narrow leaves marked similarly. The mature rosette is scarcely more than 8 inches in diameter. *A. schottii,* with narrow gray-green leaves that lack marginal bands, looks like a small yucca.

CRASSULACEAE.—This family includes a number of genera that furnish desirable succulents. For the plant lover who has sunny windows at his disposal, the related genera *Bryophyllum* and *Kalanchoe* merit attention, because of their fine leaves and often very handsome flowers, freely produced in midwinter. *K. tomentosa, K. marmorata, K. blossfeldiana, K. orgyalis, K. beharensis,* and *K. uniflora* are particularly attractive.

Rosette plants, like forms of *Echeveria* and *Cotyledon,* afford admirable spots of color and fine flowers.

Many of the crassulas, sempervivums, sedums, and rocheas should be investigated for suitability for indoor culture.

One common error must be avoided. Do not think that succulent plants are xerophytes and need neither water nor food in abundance. Although they will endure a few days of neglect with impunity, their requirements for water and food must be met, but only in season and in proper amount.

EUPHORBIA.—This is a large genus of plants widely distributed over the earth and exhibiting great diversity of form. There are species with spectacular and highly colored bracts like the poinsettia, herbaceous forms useful only in the garden, and a great variety that closely resemble certain cacti in their shape and appearance.

One of the best euphorbias for pot culture is *Euphorbia lactea* (fig. 5), which grows erect like a tree and has a three-sided trunk with spiny protuberances. The branches are produced symmetrically in an ascending candelabralike fashion. The whole plant is a deep green with irregular and not very conspicuous silvery marblings along the faces of the branches. The actual leaves are small and soon drop off.

APICRA.—The apicras, like the haworthias, are grown for their handsome leaves and curious growth habits. The two groups require much the same treatment. Their beauty lies in their beautiful formation that is almost architectural in its perfection.

HAWORTHIA.—This is a useful family of South African plants of the lily family with handsome foliage and somewhat inconspicuous flowers (fig. 6). There are two particularly obvious groups, one having semitranslucent leaves, and the other thick, leathery leaves with dots or tubercles. They require the same treatment as the gasterias.

The beginner might well start with *Haworthia margaritifera* or any of its forms, such as *H. fasciata* or *H. attenuata,* representatives of the dark-leaved forms with whitish tubercles, or *H. tesselata, H. turgida,* or *H. cymbiformis,* representing the other types.

There are so many handsome and curious haworthias that they often become a collector's hobby.

GASTERIA.—The gasterias are handsome foliage plants that develop into very fine specimens with thick leaves arranged in several characteristic fashions, usually dark green in color, with light green or silver spots and splotches in some, and pearly white tubercles in others. The kinds most commonly found have leaves arranged in a rosette or in two ranks, making a very formal plant (fig. 6). There are others

that develop more or less of a trunk, on which the leaves may be arranged in two ranks or in a spiral. All produce branched or simple stalks with curious pendent flowers that are pinkish orange and are often tipped with green. These frequently appear through the winter and so are particularly welcome.

The species *Gasteria verrucosa*, *G. nigricans*, and *G. carinata* are particularly handsome, but almost any species is desirable. There are several hybrids with aloes, known as gasteraloes, all of which are fine pot plants.

All gasterias like a moderately rich soil with enough sand in the mixture to permit perfect drainage. During the winter little water is needed, but with the approach of spring the amount should be increased to support flowering and new leaf formation.

IVIES AND OTHER VINES

ENGLISH IVY.—Of late there has been an increase of interest in the English ivy (*Hedera helix*) and its innumerable forms (fig. 7) and of the several other species of ivy that are to be had.

The English ivy, even in its common form, makes an excellent pot plant. If training is begun early a fine specimen can be developed by constantly pinching off the ends of the shoots. This will result in a fine mass of laterals that may then be trained against a trellis or bamboo rod placed in the pot.

Some of the smaller-leaved forms make even better house plants than the common variety. Such plants differ from the common variety not only in size of leaf but in shape, varying from almost starrily pedate to cordate, with no lobing of the margins.

Variegations seem to be of two types, one mosaiclike, consisting of irregular flakes and mottlings over the leaf surface, the other marginal and often accompanied by a graying of the green portions of the leaf surface. Each type has its attractions.

Hedera helix minima and *H. helix conglomerata* are dwarf, compact, suffruticose forms with small leaves. Several clons of what appear to be arborescent ivies, introduced recently, make naturally bushy plants. These are the useful self-branching ivies. There is a finely variegated form of the tender *H. colchica*, known as "Gloire de Marengo," that makes a particularly useful house plant. All these ivies can be used in cold rooms and often develop fine winter leaf colors that never show in warmer rooms.

OTHER "IVIES."—Various other plants are called ivy that are not related to the real ivy plant. German ivy, or ivy groundsel (*Senecio mikanioides*), may be used as a trailing vine or trained on a trellis for its bright green maplelike leaves and its dull orange yellow flowers. Kenilworth ivy (*Linaria cymbalaria*) is a delicate trailer with flowers like tiny lavender snapdragons. Ordinary culture will suit either of these somewhat secondary plants.

SPIDERWORTS.—Wandering jew is a name given to three very similar plants belonging to the spiderwort family, *Zebrina pendula*, *Tradescantia fluminensis*, and *Commelina nudiflora*. The foliage is so similar that they are hard to distinguish except when in flower. They are all used more or less for hanging baskets and as trailers or as ground or bench covering. Wandering-jew zebrina (*Z. pendula*) has rose-red flowers that open in sunshine and leaves that are never green

but have reddish purple on the under surface with stripes of the same color on the edges and at the center of the base of the silvery upper

FIGURE 7.—Various clons of the ivy, *Hedera helix*. From top to bottom: *H. helix caenwoodiana, rhomboidea, conglomerata, marmorata elegans*, Mrs. Pollock, *albo-marginata*.

surface. *Tradescantia fluminensis* usually has green leaves that in strong light appear reddish purple underneath. Some forms have

leaves with stripes of yellow and white. If grown in shade, the leaves may be green. *Commelina nudiflora,* also known as creeping day-flower, is green-leaved and has blue flowers. Both *Z. pendula* and *T. fluminensis* are tender to frost. All three are easily grown but require plenty of water. They are easily propagated by cuttings and root freely at each node.

ASPARAGUS.—Three members of the asparagus group must be mentioned. *Asparagus asparagoides,* the smilax of florists and not very valuable for home culture, *A. plumosus,* frequently used with cut flowers, and *A. sprengeri,* which is perhaps the most useful. The first needs a tall bamboo pole or a long string to climb on; the second develops very slowly; and the third requires abundant food. In the first the cladodes are leaflike; in the second, almost hairlike; and in the third, flattened like spruce needles. All three species need good light, rich soil, and plenty of moisture.

OTHONNA.—Little pickles (*Othonna crassifolia*) is a drooping or vinelike plant with short fleshy leaves. When grown in sunshine, it usually bears yellow flowers. It withstands variations in moisture and is readily propagated by pieces of the stem. It can be summered in hanging baskets or pots, or in the open ground, preferably in a sunny location.

IVY-ARUM.—Recently several half-climbing vines belonging to the Arum family have become common and are very satisfactory as window plants. They are designated as species of *Pothos* or *Scindapsus.* All are distinguished by their heart-shaped leaves, usually of glossy green, sometimes blotched with yellow, and for their capacity for thriving in rooms with only moderate light and high temperatures. All are somewhat more in scale for pot cultivation than the related philodendrons of which only one is reported to do well under house conditions. This species, *Philodendron elegantissimum* of the trade, has handsome divided leaves.

Another aroid is ceriman, or monstera (*Monstera deliciosa*), which is sometimes grown in pots for use in very large rooms. It has large-lobed leaves which are oddly perforated with large holes, and is a spectacularly decorative plant.

CISSUS.—Evergreen grape is the somewhat misleading name of a plant, *Cissus rhombifolia* (formerly *Vitis rhombifolia*), that is very useful for growing as a drooping vine or to train over a trellis. The leaves are compound with three rhomboid leaflets that are shining green and leathery in texture. Native in South America and the West Indies and hardy out of doors in California and some of the Gulf States, this species is more tolerant of house conditions than might be imagined. It should be used in situations similar to English ivies but in rooms with somewhat higher temperature ranges. Whenever it grows out of bounds it can be cut back and will quickly establish new growth. In general, all of these vines require a rich, porous soil full of humus and fibers, uniform moisture, fair humidity, and not too much summer sunlight.

FLOWERING PLANTS

As is pointed out elsewhere (p. 1), the beginner would probably be wise not to try first plants grown primarily for their flowers. This statement can be modified, however, by suggesting that he

should not begin with those plants that are treated as greenhouse annuals, that is, developed up to one flowering, and then discarded.

PRIMROSES.—Although in common practice the florist's primroses (*Primula obconica, P. forbesi, P. sinensis,* and *P. malacoides*) are grown to flowering size and sold and then discarded, they may be kept on, particularly *P. obconica.* As the plant ages it forms a low woody trunk that should be partly buried at each transplanting. When purchased, the plant is usually in full growth, with flowers or developing flower shoots. It must be given ample light, even moisture, and as evenly moist an atmosphere as the room permits. After flowering, it should be allowed to become somewhat dormant by reducing the water supply. In the autumn it can be repotted with rich, well-drained soil, watered freely, and started into growth and production of new flower shoots.

GERANIUMS.—These handsome flowering shrubs belong to the genus *Pelargonium* and are native in South Africa. The horseshoe, Lady Washington, and ivyleaf geraniums are all valued for their flowers. For successful pot culture they should be given a relatively cool temperature, rather small pots to induce root crowding, and a moderate but not irregular water supply. They should be propagated by cuttings at frequent intervals so that the old plants may be discarded.

Although their flowers are small and rarely showy, mention should be made of the species with scented foliage—rose, nutmeg, apple, lemon, peppermint, and the like—all of which make excellent house plants.

BEGONIAS.—There are enough species and horticultural forms of begonias to make a collector's hobby. (See also p. 10.) The commonest forms are usually varieties of *Begonia semperflorens,* which are excellent for the sunny window. They are very showy, having succulent stems, shiny leaves, and an almost-continuous succession of white, rose-pink, or scarlet flowers. Tall-growing species such as *B. argenteo-guttata* are valued primarily for their handsome leaves but also produce fine pendent panicles of showy flowers. It should be remembered that begonias are tropical plants and are intolerant of cold and dryness in either air or soil.

CACTI.—Although all species of cactus flower, only a few are commonly grown for their blooms. The Christmas cactus (*Zygocactus truncatus*), with pendent flowers of brilliant cerise pink, likes uniform moisture, some shade, and a mild temperature. It should have a fairly rich soil and may be grown on its own roots or grafted on *Pereskia,* if standards are wanted.

Another group, known in catalogs as either *Epiphyllum* or *Phyllocactus,* make larger plants with flattened shoots that look like broad leaves. The large flowers are white, pink, amber, scarlet, or crimson. Requirements are the same as for the Christmas cactus.

The night-blooming cereus (*Selenicereus* or *Hylocereus*) makes much larger plants, requiring large pots in time. As this is a summer-flowering species, it is less decorative in the house and can often be overwintered in a cool, fairly dark room. Rich soil, heat, and moisture are needed as active growth starts again.

CYCLAMEN.—Cyclamens, like primroses, are most effective when purchased for bloom and then discarded. They need a fairly cool room with fresh air and special attention to watering, so that no water stays in the crown to rot the bases of leaves and flower shoots.

AMARYLLIS.—The plants grown under this name are usually species of *Hippeastrum*. They are tropical bulbs that can be kept in more or less continuous growth or else grown so that their dormant period comes during the summer and their flowering period in the winter. This is accomplished by withholding water as soon as the leaves show signs of yellowing. Dormancy can be continued until one chooses to start growth by restoring water. From 2 to 4 weeks must pass before flowers develop. Leaves follow blooming in most cases and must be allowed to develop luxuriantly for a good development of the bulb and the next year's flowers.

Many other plants of this general type, belonging to such genera as *Sprekelia*, *Vallota*, *Nerine*, and *Chlidanthus*, also make good pot plants.

CALLA.—The calla (*Zantedeschia*) is often called the calla lily though it is not a lily. The showy portion is a well-developed spathe surrounding a spadix on which the flowers are borne. The leaves are large and arrow-shaped and are all borne on a large bulb from which the flower stems also grow. The common calla (*Z. aethiopica*) has many varieties, some growing 6 feet tall, others only 1 foot. The flowers are white and sometimes are 8 inches or more long. There are several species of calla with colored flowers or with spotted foliage, but forms of the common white calla are best for house culture.

The bulbs should be planted in late summer or early fall in pots only just large enough to hold one bulb with the soil about it. It is well to keep them a little cooler while the roots are starting (60° F.) than after growth begins (65° to 70°). Callas will grow continuously if permitted to do so, but it is best to rest them in summer by laying the pots on their sides in the shade of shrubs or low-branching trees, so as to withhold moisture. The bulbs should have only moderate watering until growth starts. Summer-grown bulbs produce the largest flowers, but the foregoing methods are most likely to result in winter flowers. Best results are obtained with sunshine, although fair results can be obtained with strong reflected light and a little direct sunlight. The bulbs are best when repotted after the summer rest. Manure water should be used after buds have begun to develop. Callas may be grown in the indoor water garden either as marsh plants or in shallow water. New plants are obtained by natural division of the crowns.

MARICA.—Marica (*Marica gracilis*) is a member of the Iris family and has narrow, gracefully arching leaves and small, iris-shaped flowers predominantly blue or white, borne near the end of flat, leaflike scapes that sometimes take root from the tip. All species thrive without sunshine. It is well to put them outdoors in summer in a partially shaded situation even though it is not convenient to set the pot in the soil. They bloom in late winter or early spring.

DUTCH BULBS.—Spring-flowering bulbs, or "Dutch" bulbs, are often forced into flower for window-garden use. Hyacinths, tulips, and various kinds of narcissus, including Chinese sacred-lily, Paperwhite narcissus, and daffodils, are those most commonly grown. Success with these requires that they be started early and kept in a cool place (40° F. is not too cool) until the root system has developed well, when they may be put in a slightly warmer place until growth starts. Later they may be given still more heat, a temperature of 55° to 60° being warm enough. If kept too warm, flower stems and leaves grow

tall and weak and require support. Tulips not only need to be kept cool, as do other bulbs, but should be buried deeply until the flower bud has pushed out of the bulb.

The Chinese sacred-lily, Paperwhite narcissus, and hyacinth are often grown in water without soil, in wide-mouthed bottles or jars in which they just fit, or supported in shallow dishes by stones or sand. The plants should be kept cool and preferably in the dark until the roots are well formed. Usually they are kept too warm, so that leaves and flower stalks grow too long and are so weak that they are not self-supporting, and the flowers often blast.

After tulips, daffodils, or hyacinths have flowered in the house, whether brought into bloom in the home window garden or purchased from the florist, they may be set outdoors as soon as danger of frost is past, if it is desired to have them in the garden the following year. They should be turned from the pots as described for repotting (p. 4), the broken drainage material should be removed, and the ball of earth should be planted without being broken, the plant being set so that the level of the soil from the pot is slightly below that of the surrounding soil. Daffodil bulbs can often be forced again after having been grown in the open ground for a year or two.

POINSETTIA.—These tropical plants are classed botanically as *Poinsettia* (*Euphorbia*) *pulcherrima*. They have showy, bright red, light pink, or white bracts or modified leaves surrounding inconspicuous flower clusters and are usually grown to flower at Christmastime. After the flowers fade and the colored bracts fall, the plants may be removed to the cellar or to any well-ventilated place where they can be kept at a temperature of from 45° to 55° F. to dry out until late spring, when the stems will again show signs of growth. At this time they should be carefully removed from the pots, the old soil either crumbled away or washed from the roots, and the plants repotted in pots just large enough to hold the roots without crowding; rich soil and plenty of drainage material should be used. At the time of repotting, the plants should be cut back severely, often to within 3 or 4 inches of the soil. They should be kept in a light, fairly warm place and be moderately watered until growth starts, after which they should be given an abundance of water, but at no time should the soil be allowed to become extremely wet. When the weather becomes warm, the pots may be set in a flower border or in some protected place outdoors where the plants will not be crowded and will be kept watered and growing during the summer. At the first approach of cool nights the plants should be taken indoors and kept in a light, airy place at a temperature of 60° to 65°. They should not be subjected to drafts or to wide variations of temperature, as any extremes, hot or cold, will cause the leaves to drop. As the blooming period approaches, the plants should be given one or two waterings with liquid manure. If they become pot-bound they will need repotting, or the leaves will drop.

Poinsettias are propagated by cuttings made from the new growth in the spring or early summer. Often the newly rooted cuttings, especially the smaller plants from summer propagation, are planted three or four together in the same pot or pan. Although the plants may be small they will bloom at Christmastime.

FUCHSIA.—Fuchsias are mostly South American plants that may range from small shrubs to small trees, but the types most commonly

grown are horticultural clons of one or two species. They are grown for their handsome drooping flowers (fig. 8) that are particularly rich in pinks, reds, and purples, often with a brilliant contrast between the showy tube, the calyx lobes, and the petals themselves. They need a fairly rich, well-drained soil, a moderately cool temperature, and good light without too much direct sunlight. Water should be supplied regularly while growth is active and less abundantly when

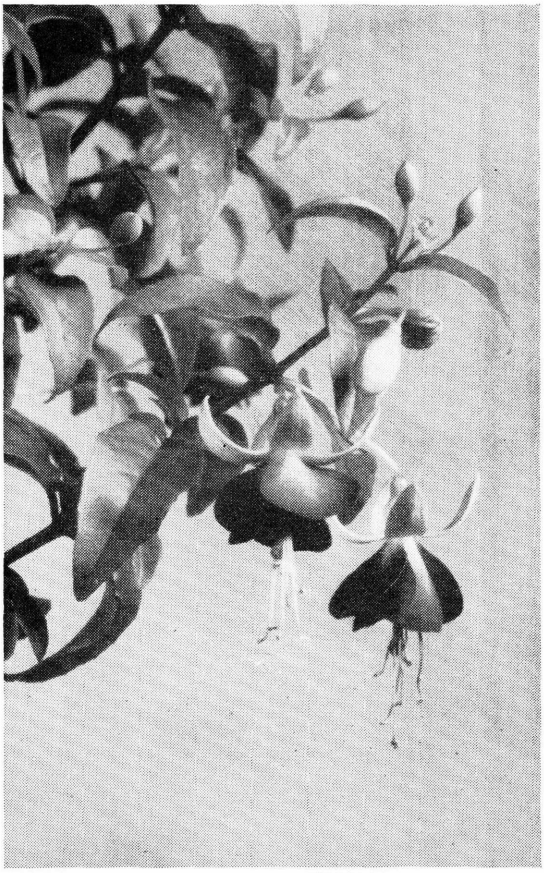

FIGURE 8.—A single-flowered fuchsia.

signs of dormancy appear. They are easily propagated by either seed or cuttings.

SAINTPAULIA.—The so-called African-violet (*Saintpaulia ionantha*) (fig. 9) is a blue-flowered, constant-blooming plant under house culture. The soil should be well drained, a light fibrous loam being excellent. The plants can be given a rest by withholding water. Water on the foliage is injurious. New plants may be started by inserting a leaf, with an inch of the petiole attached, part way into sand that is kept only slightly moist.

MYRTLE.—True myrtle (*Myrtus communis*) is a small evergreen shrub often found as a house plant and valued for its shining evergreen

leaves and white, roselike flowers that have a mass of slender stamens. It needs a rich, somewhat peaty soil and the same treatment as that required by azaleas.

CAMELLIA.—Like the gardenia, the camellia (*Camellia japonica*) is sometimes used as a house plant and suffers from many of the same difficulties. For best results it should be given a cool, light location where it can be allowed to develop its flowers without forcing from February to April, according to location. The next greatest need is for an even moisture supply. After flowering, growth should be encouraged in order to make good wood for flowering the next season.

Irregularities in temperature and moisture are believed to be the commonest cause of the dropping of the flower buds.

DAPHNE.—Most of the daphnes are hardy shrubs and are regularly planted outdoors. *Daphne odora* is so used where it is hardy, and it

FIGURE 9.—Saintpaulia, the so-called African-violet.

also makes a good pot plant, as it is slow-growing and flowers when small. It should have a rich, acid soil mixture and fairly low temperature. It is valued for its handsome evergreen, laurellike leaves and small, crowded masses of white or pink flowers that are highly perfumed. The cultural requirements are the same as for azaleas.

FRAGRANT OLIVE.—This shrub (*Osmanthus* (*Olea*) *fragrans*), like the daphnes, is valued for the pervasive scent of the flowers which are small, greenish, and inconspicuous. The evergreen leaves are small, but the plant grows large and should not be grown unless there is ample room. The cultural requirements are the same as for camellias.

OLEANDER.—The various cultural forms of oleander (*Nerium oleander*) in time make large shrubs with many stems, large rounded masses of leathery foliage, and in season fine heads of pink or white flowers. The plant can be treated the same as camellia, flowering being allowed to commence in late winter and extend into the summer.

As the plants flower when very small and are easily propagated from cuttings, new plants can be started as needed. If oleanders are fairly dry in winter, they can be kept at temperatures just above frost.

ARDISIA.—Many gardeners like to keep a plant of this handsome evergreen shrub (*Ardisia crenulata* (*A. crispa*)) not so much for the sake

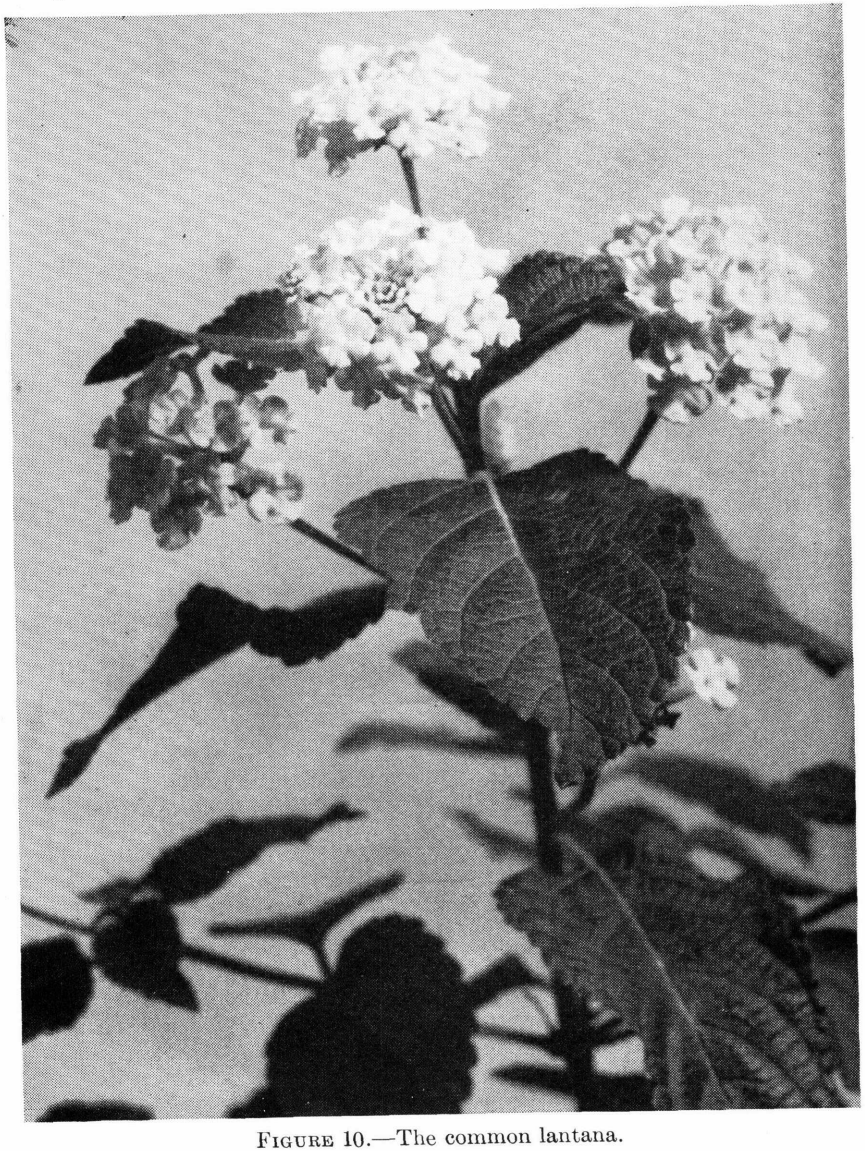

FIGURE 10.—The common lantana.

of its flowers, which are not very showy, as for the handsome red berries that follow and remain sometimes for 2 years in good condition. The cultural requirements are the same as for camellias.

ACACIA.—The enterprising gardener who has ample space in a fairly cool room may care to attempt the growing of an acacia or two. Some

of the smaller species, such as *Acacia baileyana* or *A. pubescens*, might be tried. They need good light, cool temperatures, and good culture after flowering to make wood for the next season. All have handsome foliage and fine masses of flowers that look like balls or pompons of yellow floss. Many are finely scented.

ABUTILON.—The so-called flowering maples are old-fashioned shrubs sometimes grown for their large, nodding, lanternlike flowers of white, yellow, orange, or red. They are intolerant of chilling but must not have too high temperatures. Rich soil will produce a vigorous growth, which is desirable for flowering but may make summer pruning necessary.

LANTANA.—Many of the color forms of *Lantana camara* that are commonly grown as bedding plants make useful house plants, flowering from January to summer (fig. 10). The cultural requirements are the same as for geraniums.

Beloperone guttata has become popular in recent years because the handsomely colored bracts enclosing the inflorescence keep in condition for a long time after the actual flowers have past. In order to have good specimens a rich, peaty, well-drained soil should be used and the formation of many shoots induced by frequent pinching of the tops. This will provide a maximum of growing tips for flowering. New plants, raised from cuttings, should be substituted for old plants that have become ungainly or past flowering. Cold air should be avoided; also irregularities in watering. The plant needs plenty of light and a fairly high temperature.

HELIOTROPE.—Sometimes an attempt is made to grow this tropical shrub (*Heliotropium peruvianum*) in pots for its highly scented lavender flowers. Unless a moderate temperature and ample light can be given, it will make a poorly shaped plant no matter how often it is pruned. The best flowering will not come until after mid-January.

JASMINE.—These tropical vines are sometimes grown in pots for their highly scented flowers, which are produced in clusters or panicles and are tubular with starry faces of white or yellow. Almost any rich soil will suit, and if by judicious pruning they can be kept in bounds some will make useful plants, particularly the tropical *Jasminum gracillimum* and *J. grandiflorum*.

There are many other tropical shrubs that can be grown in pots in the house once their requirements are learned and the routine of their culture established.

DISEASES AND INSECTS [2]

House plants are subject to few specific diseases. Most of their troubles are traceable to unfavorable growing conditions, particularly improper watering, dry atmosphere, and the presence of injurious gases. Some house plants, such as rubber plants and screwpines (pandanus) are occasionally attacked by fungus leaf spots. When these occur the affected leaves should be removed and destroyed, together with all plant debris in or around the pot. Syringing of the plant should be avoided until the fungus infection has been eliminated. The appearance of the fungus leaf spot of the rubber plant is sometimes associated with shock to the plant from a sudden change in tempera-

[2] The notes on diseases have been contributed by Thelma B. Post, formerly scientific aide, Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry; those on insects have been largely contributed and entirely reviewed by C. A. Weigel, senior entomologist, Division of Truck Crop and Garden Insect Investigations, of the Bureau of Entomology and Plant Quarantine.

ture. As fungus attacks of house plants are almost always secondary, maintaining the plant in vigorous health by providing favorable cultural conditions is usually an adequate safeguard against them.

House plants are subject to the attack of certain insects, especially scale insects, mealybugs, spider mites (often called red spiders), plant lice, and in a few cases worms at the roots.

Scale insects are soft-bodied and usually live under hard scales that may be round, oval, or shaped somewhat like oystershells or tortoise shells. Palms, citrus, crotons, ferns, ivy, oleander, and rubber plants are among those most frequently attacked by scale insects. They are difficult to detach. The soap-and-water treatment used for cleansing the foliage is reasonably effective in destroying them, as is a solution made by adding 1½ teaspoonfuls of nicotine sulfate to a gallon of water in which 2 level tablespoonfuls of soap flakes or about an inch cube (about 1 ounce) of soap has previously been dissolved, either sprayed on or preferably used as a wash. Sometimes the regularly placed brownish spore cushions on the under side of fern fronds are mistaken for this type of insect.

Mealybugs look like little downy white tufts and are usually found along the veins on the under side of the leaves, in the leaf axils, or on the stems. They often form large masses and are difficult to eradicate. An effective method of elimination is the soapsuds bath or the nicotine sulfate and soap solution mentioned for scale insects, followed by the removal of every remaining insect. A wisp of cotton fastened to a splint or toothpick will be found helpful in dislodging them. A close search should be made each day until eradication is complete. When it is practicable, the plants may be held under a faucet, or some other forceful stream of water, to wash off the insects. Treatment must be repeated frequently to keep these pests under control.

Spider mites, or red spiders, are little red or greenish mites hard to see with the naked eye, that sometimes breed in large numbers and collect in tiny webs that they spin in the angles of the leaves where the petiole or leafstalk is attached to the stem of the plant. They are checked by the soapsuds bath or by frequent syringing of the plant with clear water under considerable pressure and are killed by spraying with contact insecticides, such as sprays containing derris extract or derris root powder and soap solution. They should be used according to the directions on the label of the container. Dusting with very fine sulfur, known as dusting sulfur, or with sulfur dust mixed with another insecticide is also of value.

Plant lice are small, soft-bodied, sucking insects, green, brown, or black in color. They are usually found on the under side of the leaves, causing them to curl; the leaf thus often forms a rooflike protection for the insect. These lice also infest young stems. The soapsuds bath, nicotine sulfate-soap spray, or pyrethrum or derris spray are effective.

White flies are often found attacking geranium, lantana, and other plants, causing the leaves to turn yellow and die. They also excrete a honeydew on which a sooty fungus grows which blackens the plants attacked. The young are light green in color and scalelike in appearance. The adults are very tiny, no larger than a pinhead, and are covered with a white powdery substance from which they derive their name. They are controlled by spraying two or three times at weekly

intervals with nicotine sulfate and soap solution or with derris, as recommended for red spiders.

Tiny maggots or worms in the soil often injure the roots of plants. They are white harmless-looking creatures, very different from earthworms. They eventually emerge into the air as small flies, called fungus gnats. An effective remedy is to drench the soil with a corrosive sublimate (bichloride of mercury) solution prepared by dissolving one 7½-grain tablet in 1 pint of water. *This substance is very poisonous and needs to be carefully guarded and handled. It should be prepared only in a glass or wooden container, as it corrodes metal. These tablets should be purchased only in quantities sufficient for immediate use, so that they will not have to be stored and thus be accessible to children or careless adults.*

SOME CAUSES OF UNHEALTHY APPEARANCE

General defoliation suggests gas poisoning, although it may be due to a sudden change in temperature, shock from transplanting the plants when in vigorous growth, or changing them from strong sunlight to a dark place. If after the dropping of the leaves the shoots remain dwarfed, branch repeatedly, and put out small leaves, gas injury is further indicated.

Browning of the leaf tips suggests improper watering, exposure to drafts of cold air, or insect attacks. With aspidistras, this appearance may be due to the fact that water does not penetrate the ball of earth in the pot when applied or to excessive heat from exposure to full sunshine when the plant is not hardened to it. In the case of palms such browning may be due to worms on the roots or to lack of plant food; with ferns, when the browning is combined with loss of color and failure to develop new shoots, the presence of insects may be suspected.

Loss of normal color of the foliage suggests overwatering, lack of plant food, or insect attacks, especially scale, spider mite, and mealybug.

Spotted foliage suggests overwatering or burning from direct sunlight on foliage that has not been accustomed to it.

PLANTS DISCUSSED

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